REMARKS

Claims 1-29 are pending in the present application. Claims 1, 19, and 23 are independent. New claims 22-29 have been added to more particular define what applicants regard as their invention.

Initially, applicants note that the amendments to the claims are merely for the purpose of clarifying the claim language therein and are not made to distinguish the invention from the applied art. Specifically, the pending claims were amended such that the second optical transmitter emits a second variable wavelength among a plurality of second wavelengths. Thus, the second transmitter consistently uses the term "second" to describe the variable wavelength and the wavelengths among which the variable wavelength may vary. Such a more consistent use of terminology merely clarifies the claim language and is not being done to address any rejection.

ART REJECTION

Claims 1-21 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Vanoli (USP 5,808,762) in view of Goldberg (USP 5,745,284). This rejection, insofar as it pertains to the presently pending claims, is respectfully traversed.

Vanoli discloses a typical and highly conventional WDM (wavelength division multiplex) optical communication system in

which a plurality of optical sources 1A-1D respectively transmit data each at a distinct wavelength. These WDM wavelengths are optically combined via combiner 2 boosted by booster amplifier 4 and transmitted across an optical fiber to a receiving station 7 where the WDM signal is split by splitter 11. The split, received signal is then subjected to filtering via filters 11A-11D to separate each respective WDM signal wavelength such that it may be individually detected by the respective receiver 8A-8D.

Very significant is the fact that Vanoli does not disclose or suggest utilizing a variable or tunable wavelength.

All of the optical sources 1A-1D respectively transmit data at a fixed wavelength (see column 7, lines 35-45) wherein each of the WDM signals is designated by a fixed wavelength value λ_1 - λ_4.

Vanoli addresses problems in conventional WDM transmission systems. Namely, typical receiving filters that are used at the receiving end of the system to separate individual wavelengths from the WDM signal suffer from wavelength shift problems. In other words, the exacting specifications of a WDM system and the tight channel spacing between the WDM individual channels requires receiving filters that are highly stable such that they may accurately and stably separate the individual wavelengths from the combined WDM signal.

Vanoli solves this problem by utilizing the filters 11 that are constructed according to the Fabry-Perot type of filter.

Such a Fabry-perot filter has a response spectrum such as that shown in Figure 4. These filters 11 are also provided with a tuning device 22 that may shift the response spectrum. The combination of the tuning device 22 and filter 11 permits a variable passband window. In this way, the receiver in Vanoli is adaptable and can scan small wavelength ranges to exactly find each of the data wavelengths. This is discussed in column 12, lines 19-27. Once the filter is tuned on a particular carrier (WDM wavelength), the invention locks on or hooks on to that wavelength such that it may be stably and accurately received.

Such a tunable filter is an entirely different concept then the present invention. In sharp contrast, the present invention utilizes a tunable transmitter, specifically a tunable laser within a second optical transmitter. This tunable laser in a second optical transmitter, as claimed, permits the invention to monitor the WDM system. This tunable monitoring wavelength can diagnose a variety of problems in the WDM system.

To prevent the tunable monitoring wavelength (second wavelength as claimed) from interfering with the data wavelengths (the first wavelength as recited in claim 1), the present invention utilizes an optical filtering element.

This optical filtering element has a plurality of transmission peaks each of which corresponds to a respective one of the plurality of second wavelengths. In other words, the optical filtering element is configured to pass or transmit the second monitoring wavelengths such that the monitoring signal may be detected by the receiver circuit as further recited in claim 1.

There is simply no concept, suggestion or vague hint in Vanoli to utilize a tunable laser as part of transmitter of a WDM system. Instead, Vanoli teaches away from such a tunable transmitter wavelength by utilizing fixed wavelength transmitters (optical sources 1A-1D). Although Vanoli does disclose a tunable filter at the receiving end, such a tunable filter is employed to solve entirely different problems than the present invention and certainly does not disclose or suggest a tunable transmitter wavelength.

The addition of Goldberg does not remedy any of the noted deficiencies in Vanoli. Indeed it is not understood why Goldberg is applied at all. The specification of the present invention utilizes an admittedly conventional tunable laser. In other words, applicants readily admit that tunable lasers are conventional elements in and of themselves.

Such a conventional tunable laser element, however, is applied with advantage by the present invention to or within a

second optical transmitter. It is strongly emphasized that the use of a tunable laser in a second optical transmitter, particularly as recited in claim 1, is a novel and non-obvious combination of features. There is simply no disclosure in Vanoli of utilizing a variable wavelength in a transmitter of a WDM system. As argued above, Vanoli's fixed transmitter wavelengths actually teach away from such a variable transmitter wavelength.

Furthermore, Goldberg adds nothing to the teachings of Vanoli. Vanoli is a solid-state laser source that provides tunable ultraviolet radiation.

Such tunable, narrow band ultraviolet radiation is quite useful in spectroscopic applications. In such spectroscopic applications an accurate, narrow band tunable wavelength is highly useful to detect the nature of small molecules. This is a very distinct application that is not combinable with the base teachings of Vanoli. This is particularly true because WDM systems operate in the infrared wavelength range while Goldberg is clearly directed to a tunable laser that operates in the ultraviolet radiation range. Such distinct wavelength ranges and purposes of these distinct systems yields a combination of conventional art that is not tenable and should not be maintained.

The Office Action offers as motivation to combine that modifying Vanoli to include a tunable laser source would provide a compact, lightweight and electrically efficient optical system. This alleged motivating rationale is a bit mystifying. A tunable laser by its very nature is less compact, less electrically efficient, and weighs more than a laser having a fixed wavelength. This is quite apparent because tunable laser sources require additional devices that permit the wavelength to be tuned. This is a fact not true of fixed wavelength sources.

Thus, the alleged motivation offered by the Office Action is not accurate. The statements in column 1, lines 54-62 of Goldberg merely compare Goldberg's tunable UV laser against other tunable lasers. In contrast, the Office Action seems to suggest that replacing a fixed wavelength source with a tunable wavelength source would of somehow resulted in a more compact, more lightweight and electrically efficient optical system. This simply cannot be the case.

Even if it were the case, there is still no motivation to combine Goldberg and Vanoli. Clearly, Vanoli's WDM system utilizes transmitters of fixed wavelengths. Goldberg's UV tunable wavelength laser for spectroscopic applications is an entirely distinct application that would offer no benefit to Vanoli's WDM system. It is respectively submitted that the only motivation for utilizing tunable transmitter wavelengths is that

found in the present invention. In other words, it appears that the Office Action is engaging in hindsight reconstruction of the invention, which is clearly impermissible.

Furthermore, the Office Action utilizes several instances of official notice to supply teachings clearly missing from the applied art. While applicant reserves the right to challenge such use of official notice, applicants also believe that the invention is patentably distinguished from the applied art based on the independent claim features as argued in detail above.

For all of the above reasons, taken alone or in combination, applicants respectfully request reconsideration and withdrawal of the art rejection.

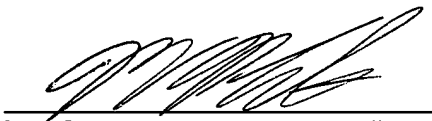
CONCLUSION

If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is invited to telephone Mr. Michael R. Cammarata at (703) 205-8000 in the Washington, D.C area.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.F 1.16 or 1.17; particularly, extension of time fees.

Respectively submitted,

BIRCH, STEWART, KOLASCH & BIRCH, LLP



By _____
Michael R. Cammarata, #39,491

P. O. Box 747
Falls Church, VA 22040-0747
703-205-8000

MRC/te